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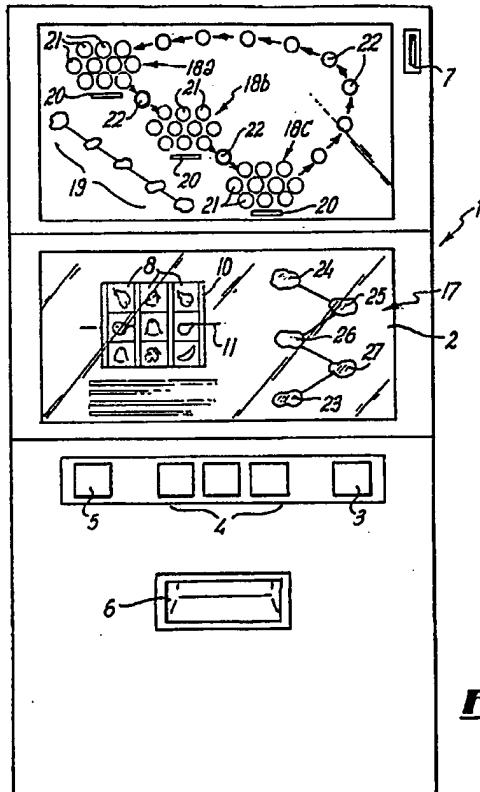
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## (54) Entertainment machines

(57) A coin- or token-operated entertainment machine such as a fruit machine produces a symbol combination e.g. by random rotation of symbol-bearing reels (8) and a win indication is given if the combination is of a predetermined winning nature. There is also a jackpot feature whereby prize value is transferred between separate jackpot displays (18a, 18b, 18c) as successive games are played. On attaining a jackpot win, the player can receive a prize corresponding to one or more of the jackpots. The jackpot displays may simulate movement of coins (21, 22) from one to the other of the jackpots (18a, 18b, 18c).



GB 2 181 589 A

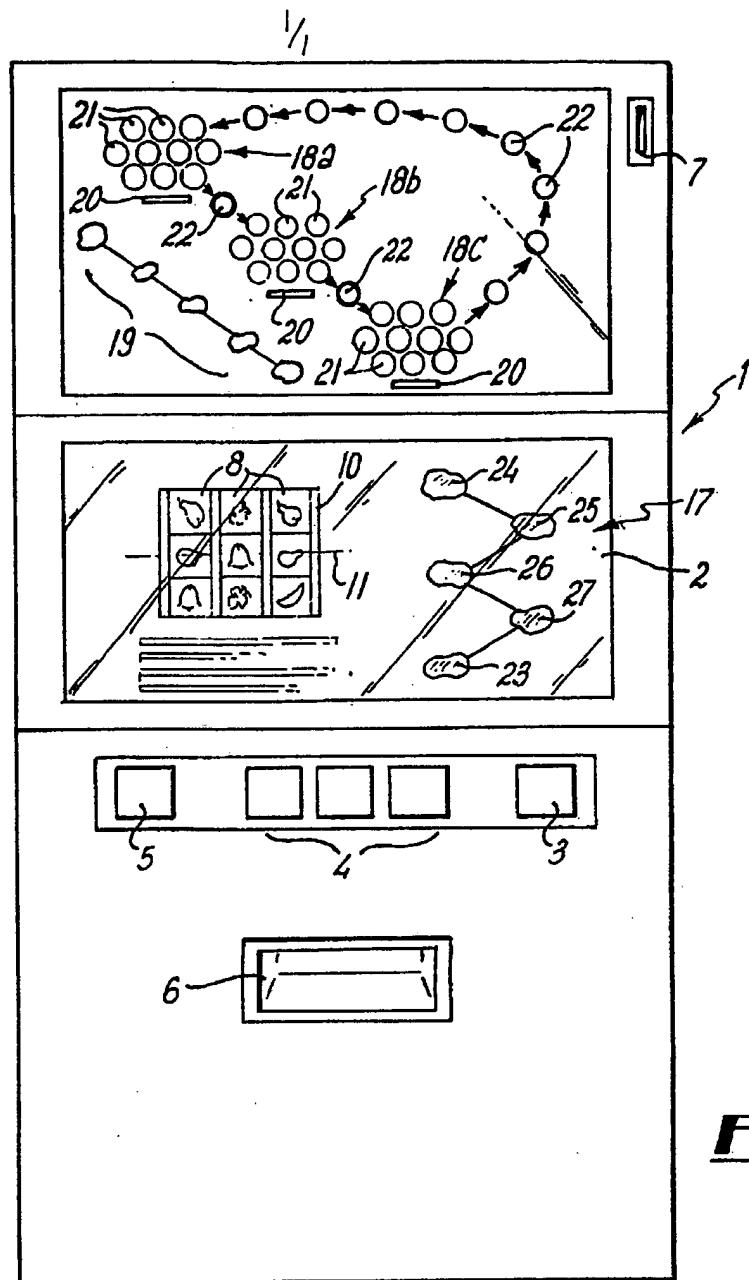


Fig. 1

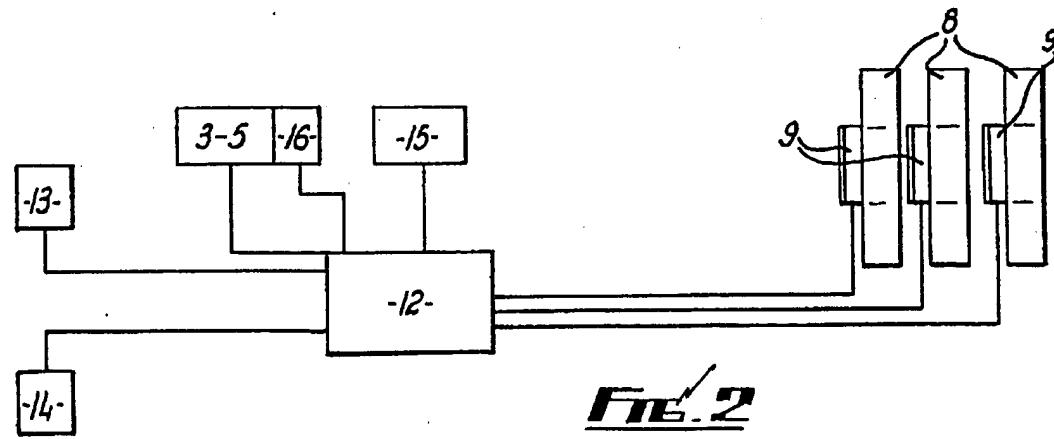


Fig. 2

**SPECIFICATION****Entertainment machines**

5 This invention relates to coin- (or token-) operated entertainment machines of the kind which is operable to play games resulting in the selection and display of combinations of symbols and with which a win indication is given in the event that a symbol  
10 combination of a predetermined winning nature is obtained. The invention is more particularly, although not exclusively, concerned with such a machine which is a fruit machine and with which the displayed symbols (typically representations of fruit)  
15 are selected at random, for example, by rotation of reels or by change of a video display simulating the rotation of reels.

With a view to promoting the entertainment value of fruit machines it is known to provide a jackpot  
20 feature. With traditional mechanical fruit machines this customarily involves the provision of a mechanism which diverts occasional inserted coins into an exposed glass-fronted receptacle, the accumulated contents of the receptacle being discharged to  
25 the player on attaining a predetermined jackpot symbol combination. With modern electronic fruit machines it is known to provide a display simulating this traditional jackpot feature comprising a number of representations of coins which are successively illuminated to simulate the filling of a receptacle, a payout determined by the number of illuminated coin representations being made, and illumination of the representations being correspondingly extinguished, when a jackpot win is obtained. This  
30 modern jackpot feature is commonly linked to an auxiliary display with which different display regions, such as letters of a word or sections of a path or ladder, are illuminated in correspondence with selection of auxiliary symbols such as numbers or  
35 letters accompanying (e.g. printed over) the main combination symbols, the jackpot win being obtained for example when all letters of a word have been illuminated or illumination has progressed along a path or ladder to reach a jackpot indicator.  
40

45 With this known jackpot arrangement two problems arise. Firstly, in so far as the accumulated jackpot prize value is carried forward at the end of each game and displayed prior to purchase and commencement of the next game, an element of predictability is introduced which may be undesirable or unacceptable. Secondly, after payout of a jackpot prize the feature may be of little interest to the player until sufficient games have been played to give rise to the accumulation of an appreciable prize value.

55 An object of the present invention is to provide an entertainment machine having a jackpot feature and with which the above-described problems can be avoided or at least appreciably reduced.

According to the invention therefore there is provided a coin- (or token-) operated entertainment machine which is operable to play games resulting in the selection and display of combinations of symbols and with which a win indication is given in the event that a symbol combination of a predetermined winning nature is obtained, characterised in that there is

also a plurality of jackpot displays between which jackpot prize value is transferred as successive games are played, and the arrangement is such that the player has the opportunity in at least some games  
70 of achieving a prize award equal to the accumulated value of at least one of the jackpot displays.

With this arrangement it will be understood that additional entertainment value arises in that the player can observe the accumulation of prize value  
75 occurring in one jackpot display by transfer from the other display or displays, but at the same time there is the possibility of avoiding undue predictability in so far as the player may not know in advance which jackpot prize value will be awarded should he  
80 achieve a jackpot win. Moreover, following a jackpot win, player interest can be maintained since it is feasible immediately to reset the jackpot displays so that appreciable prize value is again available for award. In this respect, it is to be understood that the jackpot  
85 arrangement of the invention relies essentially on the re-distribution rather than overall accumulation of prize value whereby the total prize value can be maintained at an appreciable level at all times. Indeed, and in accordance with a preferred embodiment of the  
90 invention the overall prize value may be maintained constant or substantially constant at all times.

Conveniently there may be three separate jackpot displays although any suitable number may be provided as desired. The displays may comprise simulated coin receptacles, numerical displays or any other suitable display or combination of displays.

The arrangement may be such that transfer occurs at the start or end of a game or during the course of a game on a regular predictable basis or at random or  
100 in response to selection of a predetermined symbol or combination of symbols as desired. Transfer may involve simulated movement, e.g. of a coin, from one to another of the jackpot displays. Transfer may occur in a predetermined direction and in a predetermined manner. In a particularly preferred embodiment transfer occurs from display to display in a predetermined order until an end display is filled. The displays may then reset or, alternatively, transfer may then occur from the filled display back to the  
110 other display or displays either moving in reverse or continuing around a loop.

The jackpot prize value may be a value of coins (or tokens) or may constitute one or more game features (such as fruit machine "hold" or "nudge" steps) or any  
115 other suitable award.

Award of jackpot prize value may be made available in response to selection of a predetermined symbol combination. Alternatively the jackpot feature may be linked to an auxiliary display whereby  
120 it is necessary to reach a predetermined position on a ladder or path or to illuminate a word or the like, by attaining successively appropriate auxiliary symbols accompanying the main symbol display, in order for a jackpot prize award to be made available. Alternatively or additionally the jackpot prize award may be made available on a random basis.

When made available the appropriate jackpot value may be awarded automatically. Alternatively it may be necessary for the player to take appropriate action, for example, by pressing a jackpot payout  
130

button and in this case an element of skill or choice may be introduced in that, for example, the jackpots and/or different combinations of the jackpots are made available in turn and the player has to press the button at the appropriate instant to obtain a desired payout.

The machine of the invention is preferably a fruit machine of the kind described above.

The invention will now be described further by way of example only and with reference to the accompanying drawings in which:-

*Figure 1* is a diagrammatic view of the front of one form of an entertainment machine according to the invention; and

15 *Figure 2* is a schematic circuit diagram of the machine.

The entertainment machine shown in the drawings is a fruit machine and comprises a floor-standing box-shaped housing 1 having a front wall which includes a screen-printed glass sheet 2 and, below this sheet 2 a series of operating buttons including a start button 3, hold/nudge buttons 4, and a jackpot button 5. The front wall also contains a payout opening 6 and a coin slot 7.

25 Within the housing there are three axially aligned reels 8 having, say, 20 symbols (such as pictures of fruit) at regularly spaced positions around their peripheries. The reels 8 are axially rotatable and are drivably connected to respective stepper motors 9. The 30 reels 8 are arranged behind a window 10 defined by a printed region of the glass panel 2. Each reel 8 can be arrested, by the respective stepper motor 9, in any of 20 stopping positions in which one symbol is in precise registration with a horizontal win line 11 in the 35 centre of the window 10 and two further symbols are visible above and below the win line 11.

The stepper motors 9 are connected to a micro-processor-based control unit 12. This control unit 12 is also connected to a coin mechanism 13, a payout 40 mechanism 14, the buttons 3-5, various lamps 15 behind printed display regions of the panel and lamps 16 in the buttons 3-5.

The panel 2 bears printed matter additional to the window 10 including the following:-

45 information relating to the playing of the game including details of awards which can be achieved; an auxiliary display constituting a ladder 17; three jackpot displays 18 (indicated 18a, 18b, 18c); a series of display indicators 19 alongside the displays;

50 a "double" indication 20 beneath each display 18.

The jackpot displays 18 constitute three sets of 10 representations 21 of coins linked by a circular path made up of further representations 22 of coins.

55 In use, when the machine is first switched on, selected ones up to half in total (preferably half i.e. 15) of the coin representations 21 are back-illuminated. The illuminated representations 21 are distributed between the three displays 18 (e.g. say 60 five in each). This start-up procedure, as in the case with the subsequent game playing procedure yet to be described, is controlled by the control unit 12 in accordance with a game programme stored in ROM memory addressed by the microprocessor of the 65 unit.

When the player inserts coins into the coin mechanism 13 through the coin slot 7 sufficient to generate credit for one or more games, the machine is actuated such that a game can now be played. In con-

70 ventional manner the player can press the start button 3 to cause the reels 8 to rotate and come to rest after different respective random periods of time so as to display a selected symbol combination on the win line 11. At random at the start of some games

75 the player is given the opportunity of arresting one or more reels 8 against rotation by pressing one or more hold/nudge buttons 4. At random at the end of some games the player is given the opportunity of stepping one or more reels 8 through one or more

80 steps by pressing one or more hold/nudge buttons 4.

At the end of the game the combination of symbols on the win line 11 is known by the control unit 12 since the original starting position of the reels 8 and the number of steps through which each reel has

85 rotated is known (because each stepper motor 9 is driven by a counted number of impulses fed from the control unit 12). If the final combination is of a predetermined winning nature corresponding to a payout, the payout mechanism 14 is appropriately actuated.

One or more symbols on the periphery of each reel is overprinted in conventional manner with a number. Initially (e.g. when credit is first accumulated by insertion of coins), the bottom "rung" 23 of the

95 ladder 17 is illuminated. At the end of a game the illumination moves up the ladder, in conventional manner, in correspondence with the value of any overprinted number which is on the win line 11. On reaching the top of the ladder 17 the illumination returns to the bottom "rung" 23. The top four positions 24-27 on the ladder correspond to jackpot features. If the top position 24 is illuminated, the player can

100 press the jackpot button 5 and a payout equal to the total contents of all jackpot displays 18 is made (e.g. 15 coins). If the next position 25 is illuminated the indicators 19 alongside the displays 18 are illuminated slowly in sequence and the player can press the button 5 at the appropriate instant to obtain a payout equal to the contents of a selected one of the displays

110 18 (i.e. that display 18 which has the corresponding indicator 19 illuminated). If the next position 26 is illuminated the player can again press the button 5 to obtain payout equal to the contents of one of the displays 18 which has a corresponding indicator 19 illuminated but the sequencing of the illuminated indicators 19 occurs rapidly so that skill must be exercised in order to select a desired display 18. If the position 27 is illuminated one display 18 is selected at random for payout purposes.

120 In randomly selected occasional games the "double" indicators 20 are illuminated. Any jackpot payout made in relation to a display 18 corresponding to an illuminated "double" indicator 20 is of a value equal to double the contents of that display 18.

125 At appropriate occasions, e.g. at random or at the start or end of each game, the contents of the displays 18 are redistributed. On each such occasion there is a change representing movement of one or more coins. Movement may occur successively from display 18a to display 18b to display 18c and then

back to display 18a. In more detail, initially coins move alternately from display 18a to display 18b and then from display 18b to display 18c until the end display 18c is full. Then coins move from display 18c to display 18a and so on. Other patterns of movement are also possible. Movement occurs by extinguishing a lamp 15 in one display 18, temporarily illuminating the lamp 15 (or successive lamps 15) between this display 18 and the next display 18 (at location 22) 10 and then illuminating a lamp 15 in the latter display 18. At the end of a game not resulting in a jackpot win the distribution of coins in the displays 18 is maintained for the next game, even if there is no credit remaining for the playing of the next game. The 15 lamps 15 of the displays 18 may remain lit during this carry over period between games. In the event that a jackpot win is obtained the machine resets with regard to the displayed pattern of coins. Thus, the display may return to the original starting pattern. Alternatively, and particularly where the jackpot payout corresponds to only part of the total available, that part may be reset whereby the overall pattern is maintained as it was before the payout.

With the arrangement described there is carry over 25 of a jackpot feature from game to game but there is little predictability because the player cannot know in advance which jackpot will be awarded on achieving a jackpot win. Moreover, it will be seen that the total possible jackpot payout is always the same since it is 30 the distribution, not the overall accumulation, which changes.

With regard to the indicators 19, more of these are shown than the displays 18a, 18b, 18c. The arrangement may be such that there is one indicator for each 35 display and the indicator is appropriately identified to correspond to the respective display. Thus, three indicators may respectively bear the printed information POT 1, POT 2, POT 3. The other indicators may be appropriately identified to correspond to other options e.g. 'lose', 'chance' etc. whereby selection of 40 these during the jackpot phase results correspondingly in a lost jackpot or a randomly selected jackpot payout or otherwise.

Whilst reference is made to movement of features 45 on and interpretation of the displayed information on the front panel 2, it is of course to be appreciated that the motivation for the changes in the displays and the interpretation of such changes occurs within the control unit 12.

50 Thus, when lights advance up rungs of the ladder 17 in correspondence with overprinted numbers on the reel displays, this occurs because the unit 12 knows the stopping positions of the reels (as discussed above) and is therefore able to derive a numerical value (corresponding to the overprinted 55 number) from stored data. This numerical value is used to control the transmission of switching pulses to the ladder lights and the finally illuminated rung is known as a function of the number of such switching pulses. Similarly, movement of the coins and illumination of indicators 19, 20 is controlled by feed of 60 switching pulses from the unit and response to a final display (in terms of payout to be made) is determined by the unit 12 on assessment of the pattern or sequence of light switching pulses with reference to sto-

red data. In effect therefore the pots 18a, 18b, 18c correspond to the contents of respective incremented and decremented memories or respective stored numerical values in a memory area of the unit 12.

70 It is of course to be understood that the invention is not intended to be restricted to the details of the above embodiment which are described by way of example only.

## 75 CLAIMS

1. A coin (or token-) operated entertainment machine which is operable to play games resulting in the selection and display of combinations of symbols 80 and with which a win indication is given in the event that a symbol combination of a predetermined winning nature is obtained, characterised in that there is also a plurality of jackpot displays between which jackpot prize value is transferred as successive 85 games are played, and the arrangement is such that the player has the opportunity in at least some games of achieving a prize award equal to the accumulated value of at least one of the jackpot displays.
2. A machine according to claim 1, characterised 90 in that there are three separate jackpot displays.
3. A machine according to claim 1 or 2, characterised in that the said transfer of value involves simulated movement from one to another of the jackpot displays.
- 95 4. A machine according to claim 3, characterised in that the displays comprise simulated coin receptacles and the simulated movement involves movement of coins.
5. A machine according to claim 3 or 4, characterised 100 in that transfer occurs from display to display in a predetermined order until an end display is filled.
6. A machine according to claim 5, characterised in that after filling of the end display transfer then 105 occurs from the filled display back to the other display or displays.
7. A machine according to any one of claims 1 to 6, characterised in that a jackpot prize award is made available after attaining a predetermined position on 110 an auxiliary display path or ladder.
8. A machine according to claim 7, characterised in that progression along the path or ladder is achieved in dependence on the attainment of successive symbols auxiliary to the said symbol combination.
- 115 9. A machine according to any one of claims 1 to 8, characterised in that a jackpot payout is arranged to be awarded, when made available, only after pressing a payout button.
- 120 10. A machine according to any one of claims 1 to 9, characterised in that it is a fruit machine and the said symbol combination is selected by random rotation of reels.
11. A machine according to claim 1, substantially 125 as hereinbefore described with reference to and as illustrated in the accompanying drawing.